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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
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PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

REC'D 18 JUL 2005

WIBA PCT

Date of mailing  
(day/month/year) 14 JUL 2005

Applicant's or agent's file reference

FOR FURTHER ACTION

See paragraph 2 below

1193

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US05/09892

24 March 2005 (24.03.2005)

26 March 2004 (26.03.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): C08J 9/10, 9/12 and US Cl.: 521/79, 97, 182, 916

Applicant

NATUREWORKS LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US

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Form PCT/ISA/237 (cover sheet) (January 2004)

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US05/09892

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
- a. type of material
- ☐ a sequence listing
- ☐ table(s) related to the sequence listing
- b. format of material
- ☐ in written format
- ☐ in computer readable form
- c. time of filing/furnishing
- ☐ contained in international application as filed.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US05/09892

**Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-25</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-25</u>	NO
Industrial applicability (IA)	Claims <u>1-25</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and explanations:**

Claims 1-25 lack novelty under PCT Article 33(2) as being anticipated by JP 2002-322309 to SEKISUI PLASTICS CO LTD.; (hereinafter "Sekisui") or US Patent 5,134,171 to Hammel et al., (hereinafter "Hammel").

Sekisui discloses a process for forming a pressurized molten mixture of polylactic acid resin (PLA) containing foaming agent such as carbon dioxide (see [0022]) in the amount of 10 to 30 parts by weight of the PLA, (see [0025]) and extruding the mixture through a die to foam the mixture. See all illustrative examples. The disclosed PLA is amorphous PLA comprising a mixture of L and D - enantiomers. The extrusion takes place at temperatures of 75-100 C. See [0027]. The mixture further comprises nucleating agent as per [0026]. The process takes place at the conditions at which CO<sub>2</sub> is in supercritical state. See illustrative examples. The invention as claimed, therefore, is fully anticipated by the Sekisui reference.

Claims 1-25 lack novelty under PCT Article 33(2) as being anticipated by Hammel. Hammel discloses a process for forming a pressurized molten mixture of polylactic acid resin (PLA) containing foaming agent such as carbon dioxide (see column 3, lines 35-39, illustrative example 8) in the amount of about 5 % by weight of the PLA, (see illustrative examples) and extruding the mixture through a die to foam the mixture. See all illustrative examples. The disclosed PLA is amorphous PLA comprising a mixture of L and D - enantiomers, see illustrative examples, column 2, line 61 to column 3, line 11, or various copolymers of PLA. The mixture further comprises nucleating agent as per all illustrative examples. The process takes place at the conditions at which CO<sub>2</sub> is in supercritical state. See illustrative examples. The invention as claimed, therefore, is fully anticipated by the Sekisui reference.

Claims 1-25 meet the criteria set out in PCT Article 33(4), and thus meet industrial applicability because the subject matter claimed can be made or used in industry.